Anatomical assessment of 50 forest species in southern Ecuador / *Evaluación anatómica de 50 especies forestales en el sur del Ecuador*

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La identificación de maderas tropicales a través de sus características anatómicas ha tomado mayor importancia en años recientes. Por ello, este estudio busca realizar la identificación de especies forestales a través de la anatomía de la madera, mediante un análisis estadístico de clasificación no supervisada por medio de clusters, dendrogramas, y heatmaps. Para ello se analizaron 50 especies forestales de la región sur del Ecuador dentro del laboratorio de Anatomía de Maderas Tropicales de la Universidad Nacional de Loja, y se identificaron 50 características anatómicas principales según la normativa IAWA. De éste análisis se encontró que la familia y género no influye directamente en las propiedades anatómicas de la madera, notándose grandes diferencias anatómicas entre las especies. Sin embargo, sólo en casos específicos, especies dentro de una misma familia comparten características comunes, como es el caso de Anadenanthera colubrina e Inga marginata (Fabaceae) que poseen vasos solitarios en patrones radiales y/o diagonales, y radios agregados con células cuadradas marginales de 2-4 filas; *Cedrela odorata*, *Swietenia macrophylla*, y Guarea kunthiana (Meliaceae) poseen en común anillos con poros difusos, vasos solitarios, parénquima axial difuso, radios con ancho de 1 a 3 series con células procumbentes y una sola fila de células verticales. Por todo ello, es necesario realizar un estudio más profundo de la relación entre propiedades anatómicas, clasificación taxonómica, sitio, y condiciones climáticas para lograr una mayor precisión en identificación de maderas tropicales.

Differentiating timber species from the Amazon forest in Paragominas, Pará, Brazil, using near infrared spectroscopy (NIRS) / *Discriminação de espécies de madeiras da floresta Amazônica de Paragominas, estado do Pará, Brasil, pela aplicação da espectroscopia no infravermelho próximo (NIRS)*

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O trabalho teve como objetivo discriminar 2 espécies florestais tropicais, ocorrentes na Unidade de Manejo Florestal, do município de Paragominas, estado do Pará, Brasil, monitorada há 25 anos pelo IMAZON. Foram selecionadas 41 e 46 árvores de *Copaifera duckei* Dwyer (copaíba) e de *Cordia goeldiana* Huber (freijó), respectivamente, e extraídas amostras do lenho do DAP, pelo método não destrutivo. As amostras do lenho foram fixadas em suportes de madeira, sua seção transversal foi polida, acondicionadas (12% umidade, UR 65%, 20°C) e analisadas (1 cm de distância, direção radial) no espectrômetro NIR MPA Bruker (módulo das sondas de fibra óptica 12800-4000 cm^{-1}, resolução espectral 8 cm^{-1}, dados médios de 32 leituras). Foram obtidos 2.161 espectros, tratados no software The Unscrambler® e simuladas as análises discriminantes com mínimos quadrados parciais (PLS-DA), compostas por 2 classes, (i) *Copaifera duckei*: valor esperado = 0, e (ii) *Cordia goeldiana*: valor esperado = 1, visando distinguir as 2 espécies pela análise quimiométrica das suas madeiras. Os resultados mostraram uma clara separação, com base nos valores esperados, permitindo a discriminação das espécies. A % do erro de classificação foi para a madeira de (i) copaíba [classe = 0, 0,6% (validação cruzada), 0,8% (validação independente)] e (ii) freijó [classe =1, 0,7% (val. cruzada), 0,2% (val. independente)]. Conclui-se que a metodologia NIRS permite a discriminação de *C. duckei* e *C. goeldiana*, com base nas simulações PLS-DA, utilizando-se amostras não destrutivas de madeira e, se constitui em eficiente ferramenta para a identificação de madeiras e controle da extração ilegal.

C3s: TOOLS AND TECHNIQUES FOR BETTER WILDFIRE MANAGEMENT AND RESPONSE

Flammability of species for use as fuel breaks in forest fires prevention

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In general, anthropic action is the main cause of forest fires. When these events occur in the Wildland-Urban Interface (WUI), they become a threat to local communities. One measure of forest fire prevention is the establishment of fuel breaks, which is strips of vegetation with species of lower flammability than those of the main cultivation, with the aim of reducing or avoiding fire spread. One of the characteristics observed for this purpose is the flammability of the combustible material. In this context, the aim of this study was to evaluate the flammability of *Casearia sylvestris* and *Camelia* sp., according to the methodology recommended by Valette (1990) and Petriccione (2006). To evaluate this species, 50 firing repetitions were performed in the epirradiator (250 to 350 °C), each one consisting of 1 ± 0.1 g of fine green combustible material (Ø < 0.7 cm). The following combustion characteristics were analyzed: Ignition Frequency (IF), Ignition Time (IT), Duration of Combustion (DC) and Flame Height (FH). Subsequently, a flammability value was determined, considering the IT and IF of each species. According to the average values found, *Casearia sylvestris* (IF = 96%; IT = 17.5 s; DC = 5.3 s; FH = 13.5 cm) and Camelia sp. (IF = 100%; IT = 18.7 s; DC = 14.7 s; FH = 12.2 cm) were classified as flammable species. Therefore, it is recommended that these species are submitted to combustion and calorimetry analyzes in future studies to corroborate with these results.

Colorado homeowners' willingness to pay estimates for reducing wildfire risk: a comparison of survey methods

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The loss of life, property, and natural resources has been more devasting in recent years due to the increase in frequency and severity of wildfires. To help reduce risk, the USDA Forest Service (USFS) has promoted private homeowner and public wildfire risk reduction actions. However, these are costly programs to private homeowners and county fire management agencies. To induce participation, cost share programs have been provided. However, there are very limited federal funds and it is important for the USFS to know what geographic areas have the highest economic values for reducing wildfire risk and the relative values of wildfire risk reduction actions to homeowners. In particular, the cost sharing only reduces the cost to the landowner, and if their willingness-to-pay (WTP) falls below their cost share, they will not engage in private actions to reduce wildfire risk on their properties or support homeowner associations' actions. To better understand this issue, a choice experiment survey of Colorado homeowners was conducted to estimate the amount homeowners' would pay for wildfire risk reduction programs in their community and around their home. Colorado homeowners received either an online or mail survey with three choice sets, each